Super Energy Savings Performance Contracts

Both Regional and Technology-Specific Super ESPCs reduce time and risk when financing energy efficiency improvements in Federal buildings

Program Overview

The Federal government spends nearly $4 billion a year on its electric bill for more than 500,000 Federal facilities. To reduce energy use in Federal buildings, Executive Order 13123 established a goal of a 35% reduction in energy use, from 1985 levels, by 2010. Achieving this goal will save more than $1 billion a year, but will require an investment of $5 billion in Federal energy projects. With shrinking Federal budgets, agencies need to turn to the private sector for the necessary investment.

Authorized by the Energy Policy Act of 1992 (EPAct), the Energy Savings Performance Contract (ESPC) program was created to provide agencies with a quick and cost-effective way to finance energy-saving technologies. Under an ESPC, energy service companies (ESCOs) assume the capital costs of installing energy and water conservation equipment and renewable energy systems. The ESCO guarantees the agency a fixed amount of energy cost savings throughout the life of the contract and is paid directly from those cost savings. Agencies retain the remainder of the energy cost savings for themselves.

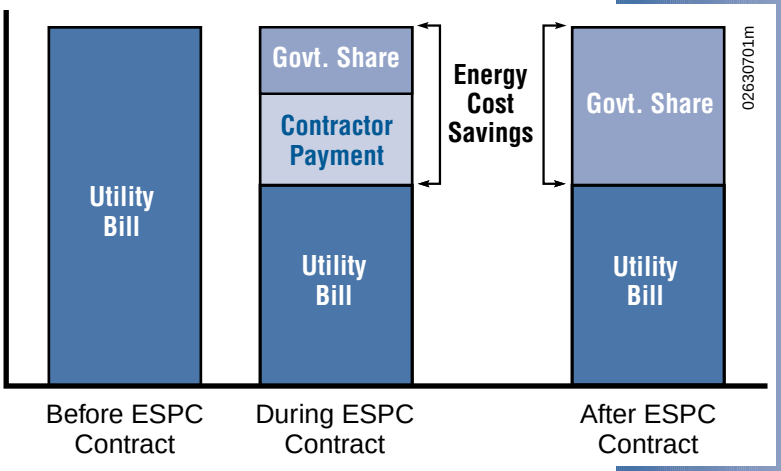
In July 1998, President Clinton directed Federal agencies to work more closely with private contractors to retrofit Federal buildings with the best energy-saving technologies at no cost to the taxpayer. However, awarding ESPCs one project at a time has often proven to be complex and time consuming. To make it easier to use the ESPC option, the Federal Energy Management Program (FEMP) developed Super ESPCs—regional and technology-specific contracts.

How Do Regional Super ESPCs Benefit Agencies?

Regional Super ESPCs are unlike conventional ESPCs in two fundamental ways. First, they blanket a large geographic territory, or region; a conventional ESPC is used for a specific site. The second, real benefit to agencies is a substantially reduced lead time to contract with an ESCO for energy services.

Before Super ESPCs, facility personnel had to do all their own contracting for energy- and cost-saving projects. This process could take as long as 18 months. It should take only 6 to 9 months using a Super ESPC. In addition, the U.S. Department of Energy (DOE) technical representatives and contract specialists can guide agency personnel through the Super ESPC process step by step.

An agency requiring energy services will develop site-specific requirements and a delivery order using DOE's Regional Super ESPC guidelines (for example, information and delivery order format for requesting ESCO proposals). Agencies may select one ESCO or request proposals from more than one without advertising the procurement. Demands on agency resources to develop and award contracts—as well as lead times—will be greatly reduced, and energy savings will be realized more quickly.



Where Are Regional Super ESPCs Available?

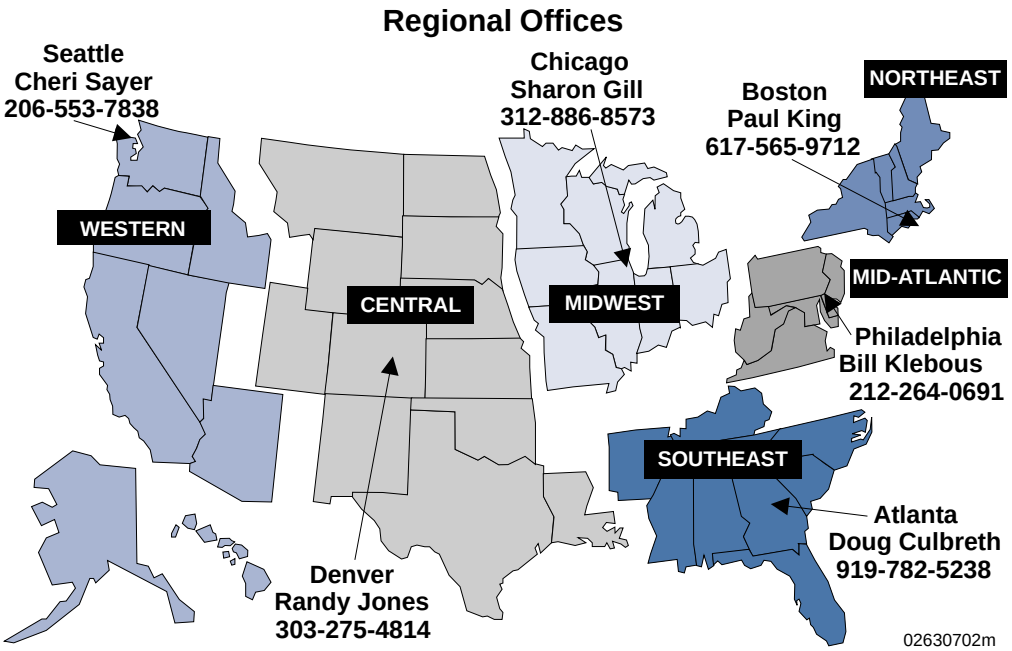
All six Regional Super ESPCs are now in place. They cover the Western, Southeast, Central, Midwest, Northeast, and Mid-Atlantic Regions. Each of these Regional Super ESPCs enables $750 million in delivery orders to be issued to improve the Federal energy infrastructure. Federal agencies across the nation can place orders for energy efficiency and renewable energy projects.

Success Stories

Examples of awarded delivery orders include:

- **U.S. Coast Guard Integrated Support Command** on Kodiak Island, Alaska. Savings from energy-efficient lighting, lighting controls,

U.S. Department of Energy
Office of Energy Efficiency and Renewable Energy



boiler controls, and an energy management and control system will total more than $200,000 annually during the contract term.

- **Seattle Air Traffic Control Center** in Auburn, Washington. A lighting upgrade and pumping modifications will save the Federal Aviation Administration more than $50,000 a year during the contract term.
- **Food and Drug Administration Building** in Bothell, Washington. An energy management and control system, variable frequency drives, new pumps, air compressors, and dryers will save more than $100,000 annually during the contract term.
- **U.S. Forest Service Forestry Science Laboratory** in Corvallis, Oregon. Lighting and heating, ventilation, and air-conditioning (HVAC) upgrades, along with an energy management and control system, will save nearly $85,000 annually during the contract term.
- **San Francisco Medical Center**. The Department of Veterans Affairs (VA) will save in excess of $500,000 annually during the contract term through a boiler replacement, an energy management control system, motor upgrades, medical air compressor and cooling coil replacement, and a lighting upgrade.
- **VA Domiciliary** in White City, Oregon. HVAC and lighting upgrades will save more than $60,000 per year during the contract term.
- **Johnson Space Flight Center** in Houston, Texas. The National Aeronautic and Space Administration is expected to save roughly $2 million a year through lighting upgrades, HVAC system improvements, and water consumption reduction.

What Are Technology-Specific Super ESPCs?

Each Technology-Specific Super ESPC emphasizes a particular advanced energy efficiency or renewable energy technology to advance these emerging technologies in the Federal marketplace. They blanket the entire nation, so any Federal agency can contract with the preselected ESCOs for services at any facility in the country without starting the contracting process from scratch.

Because ESCOs chosen for these awards have unique expertise and experience in providing energy savings through installation of the technology, risks of misapplying emerging technologies are greatly reduced. The technical contractor expertise assembled reduces implementation costs because subcontractor tiers and markups are minimized. Technology-Specific Super ESPCs can also be comprehensive projects that employ multiple energy conservation measures, on the condition that the named technology is the focus of the project. Demands on agency resources, to develop and award contracts, as well as lead times will be greatly reduced, and energy savings will be realized more quickly.

What Technologies Are Covered?

To date, three Technology-Specific Super ESPCs have been awarded. These cover parabolic-trough

concentrating systems, photovoltaics (PV), and geothermal heat pumps.

Parabolic-Trough Concentrating Systems

DOE's Golden Field Office awarded the first Technology-Specific Super ESPC to Industrial Solar Technology Corporation in September 1996 to provide low-cost hot water. The award is worth $30 million.

Solar thermal concentrating collector technologies use mirrors to concentrate heat from the sun to create steam. Parabolic-trough collectors use mirrored surfaces curved in a linearly extended parabolic shape to focus sunlight on a dark-surfaced absorber tube running the length of the trough. Heat transfer fluid is pumped through the absorber tube to pick up the solar heat and then through heat exchangers, heating potable water or a thermal storage tank. Parabolic-trough systems use single-axis tracking systems to keep them facing the sun.

Photovoltaics

The Golden Field Office awarded the second Technology-Specific Super ESPC in September 1998 for photovoltaics and associated technologies. This contract is worth $50 million and was a competitive award to HEC, Inc. and CES/Way International.

Photovoltaic devices convert sunlight directly into electricity. Individual PV cells are connected in series or parallel to form modules with the desired voltage and current output for each application. Power modules are either ground mounted or used for a variety of building applications.

The ESCOs will finance the installation of systems that can be composed of some or all of the following:

- PV modules to generate electricity to meet a direct load
- PV modules with battery storage
- PV modules with battery storage and generator backup
- Controllers
- Engine generators or controls for interfacing the PV system with a facility-provided engine generator
- Inverters and associated energy conservation technologies needed to reduce the energy load.

An excellent PV case study is the hybrid system located at the Pinnacles National Monument in California. This system provides an elegant solution to the problem of supplying electrical services in an environmentally sensitive area. The National Park

PowerLight Corporation/PIX06430

The photovoltaic technologies Super ESPC helps agencies reduce energy costs and pollution by converting sunlight directly into electricity.

Service will save nearly $180,000 during a 20-year period.

Geothermal Heat Pumps

This is the most recent Technology-Specific Super ESPC, awarded by DOE's Oak Ridge Operations Office in February 1999. The contract is worth $500 million and was awarded competitively to five ESCOs:

- Constellation Energy Source, Inc.
- DukeSolutions, Inc.
- The Enron Team
- Exelon Energy Services, Inc.
- The Trane Company

Geothermal heat pumps are electrically powered systems that take advantage of the Earth's relatively constant ground temperature to provide highly efficient heating, cooling, and hot water for homes and commercial buildings.

The world's largest installation of geothermal heat pumps, at Fort Polk in Louisiana, cost $18.9 million and will pay for itself in 20 years. Fort Polk will save $345,000 annually for 20 years and more than $2 million per year during the remaining service life of the equipment.

Joel Renner, DOE/PIX05424

Geothermal energy can be used by Federal agencies to provide highly efficient heating, cooling, and hot water.

Future Technology-Specific Super ESPCs

More Technology-Specific Super ESPCs will be awarded during the next couple of years, covering a wide range of energy- and cost-saving technologies. Next to be awarded will be biomass electric generating systems and energy-efficient chillers.

Biomass Electric Generating Systems

Biomass power plants currently use wood waste from the forest products industry as their primary fuel, with some additional use of wood from forestry and agricultural residues. The biomass Technology-Specific Super ESPC, worth $200 million, is scheduled for award in spring 2000.

Energy-Efficient Chillers

According to DOE figures, there are approximately 4,000 outdated and inefficient chillers operating at Federal facilities across the country. Energy savings resulting from retrofits to these aging chiller systems could be as high as 37.5 billion kilowatt-hours and $1.4 billion. The chiller Technology-Specific Super ESPC will be worth $100 million and is scheduled for award during the fall or winter of 1999.

How Do Agencies Use DOE Contracts?

To assist agencies in achieving their energy- and cost-saving goals, FEMP created a coordinated network of experts and partners called the FEMP Service Network (FSN). The FSN partnership consists of DOE's Office of Energy Efficiency and Renewable Energy, DOE's Golden Field Office, the DOE Support Offices, Lawrence Livermore National Laboratory, the National Renewable Energy Laboratory, Oak Ridge National Laboratory, and Pacific Northwest National Laboratory. Private-sector contractors also provide technical and advisory services.

The FSN offers support to agencies with the Super ESPC delivery order process. Such services will include assisting with the development and evaluation of Requests for Proposal, including measurement and verification requirements and proposal submission and evaluation criteria. The FSN also works with agencies to clarify ESPC requirements, site-specific operational considerations, and the possible range of retrofit technologies. The FSN is a one-stop shop for all the technical and procurement expertise and services agency personnel need when implementing energy-saving projects. Services are on a cost-reimbursable basis.

Warren Gretz, NREL/PIX00308

The biomass Super ESPC is scheduled for award in spring of 2000.

For More Information

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